

Codophila sulcata (Van Duzee) 1918, new combination.

Carpocoris sulcatus Van Duzee, 1918. Proc. Cal. Acad. Sci. 8(7): 275-276. [Syn.]

Diagnosis: A pair of black or darkened, short excavations, one on either side of the median at the base of the scutellum; connexivum maculated; straw colored, occasionally with a red tint on the corium; four, black, ray-like vittae present on the head and anterior pronotum. Many of the characters which Van Duzee presents as diagnostic for this species were found to be unreliable when a large series of specimens were examined. These include the lengths of the antennal segments, proportions of head and scutellum, and the color of the corium. As noted by Van Duzee there is no material difference between the genitalia of the two species. The male genitalia of *C. remota* is figured by McDonald (1966, Quaest. Entomol., 2: 7-150).

Food Plants: *Descurainia pinnata*, *Erodium cicutarium*.

Distribution: California (Type Loc., San Diego Co.), Nevada, Baja California del Norte, Mexico.

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A new northern record for *Philotes sonorensis* (Lepidoptera: Lycaenidae).—*Philotes sonorensis* Felder and Felder is one of the most colonial butterflies of the Pacific slope. Its unusual color pattern, biology, and distribution have attracted a great deal of attention. Most of what is known about it has been summarized in recent papers by Langston, 1965, J. Lepid. Soc. 19: 95-102 and Shields, 1973, Bull. Allyn Mus. 15: 1-16. As of 1973 the northernmost locality reported for *P. sonorensis*, as well as one of the best known, was the junction of the North and Middle Forks of the American River at 600 feet elevation, near Auburn, Placer County. This area is scheduled to be inundated when the proposed Auburn Dam is built.

On April 22, 1974, a new colony was discovered in the mid-elevation Sierra Nevada, establishing a new northern limit to the known range as well as an altitudinal record for northern and central California. This locality has subsequently been verified by O. Shields, J. Scott, R. Wells, and others. About twenty specimens have been collected and breeding has been confirmed. The precise locality is: Bowman Lake Road, from Lang Crossing of the South Yuba River (elevation 4483 feet) to at least 1.5 miles north along the road (elevation circa 4900 feet maximum) and as far as Washington (2600 feet) downstream in the gorge of the River. Lang Crossing is 1.5 miles north of the junction of

Bowman Lake Road with California Route 20, 28 miles east of Nevada City and 5 miles west of Interstate 80. This is approximately 35 air miles ENE of the colony in the American River gorge. All published records of *P. sonorensis* north of the Transverse Ranges seem to be below 2000 feet. The highest altitude recorded anywhere in the range is the summit of Garnet Peak, Laguna Mts., San Diego County, 6000 feet. The new colony occupies parts of both Nevada and Placer Counties, and constitutes a county record for the former.

The host of *P. sonorensis* at the American River, *Dudleya cymosa cymosa* (Lem.) Britt. & Rose (Crassulaceae) occurs locally on cliffs and arid, exposed sites around Lang Crossing and in the Yuba River gorge. Ova of the butterfly were found on this plant by Shields and Scott on April 28, 1974 and by the author the following day in different locations. Plants examined on the latter date were growing on a quartz-muscovite-biotite-feldspathic schist, but they appear to be limited distributionally in this vicinity by site exposure rather than by the rock substrate. The area is geologically complex. Two other Crassulaceae, *Sedum spathulifolium* Hook. and *S. obtusatum* Gray, grow in the area but neither ova nor association with the butterflies was noted, tentatively confirming the consistent use of *Dudleya* as described by Shields (1973).

Philotes sonorensis was abundant at the American River canyon on February 17, 1974 and many ova were found on *D. c. cymosa*. The last captures there in 1974 known to me were on March 18. On April 21 large larvae were found in and on the plants by L. P. Brower and myself, and these began pupating April 29. The egg and larval periods thus take about 65 days near Auburn. An elevational difference of about 3900 feet thus equals about two months phenologically, or one day for each 65–70 feet.

If *P. sonorensis* occurs this high this far north, there must be many more colonies awaiting discovery in out-of-the-way places, and the range should not be considered well-known. The very early flight period—*P. sonorensis* being usually the first non-hibernating butterfly to appear, whatever the elevation—has no doubt hindered documentation of the range. Collectors rarely begin looking for butterflies in the mountains while snow is a serious threat. On April 22, 1974 north-facing slopes at 5000 feet were snow-covered; the air temperature did not exceed 55°F, and the weather was occasionally threatening. Yet six species of butterflies were taken along with *P. sonorensis*: *Euchloe hyantis* Edwards (Pieridae), *Mitoura nelsoni* Bdv., *Lycaenopsis argiolus echo* Edwards (Lycaenidae), *Nymphalis californica* Boisduval (Nymphalidae), *Pyrgus communis* Grote and *Erynnis propertius* Scudder and Burgess (Hesperiidae). Also taken were the diurnal moths *Litocala sexsignata* Harvey (Noctuidae) and *Brephos infans oregonensis* Swett (Geometridae) and the rather rare Thyatirid, *Euthyatira lorata* Grote. On April 23–24 several inches of snow fell at Lang Crossing, but by April 29 the number of butterfly species there had increased to twelve.

In addition to persons already mentioned, living *P. sonorensis* and/or ova from Lang Crossing were verified in the field by E. W. Jameson, Jr. and at Davis by J. H. Lane and A. R. Shapiro. The rock substrate of *Dudleya* was determined by C. Durrell, Department of Geology, Davis.—ARTHUR M. SHAPIRO, *Department of Zoology, University of California, Davis 95616*.